Visualist, '70s Video Effects

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TOOLS:

- Drill (1)
- Hacksaw (1)
- Jigsaw (1)
- Screwdrivers (1)
- Soldering iron (1)
- Wire cutters (1)

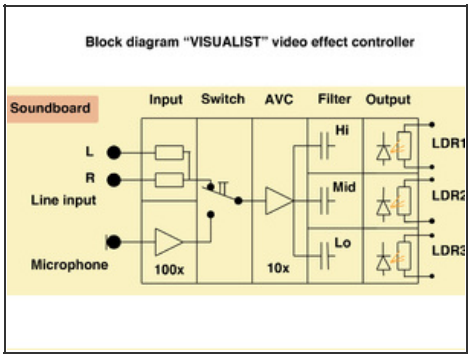
PARTS:

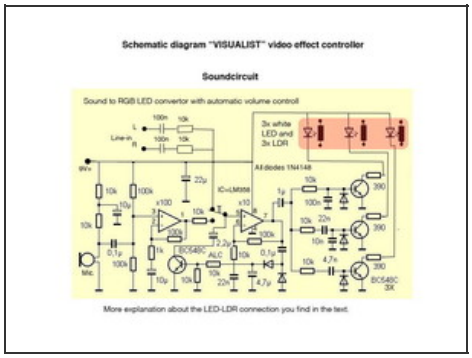
- See guide steps (1)

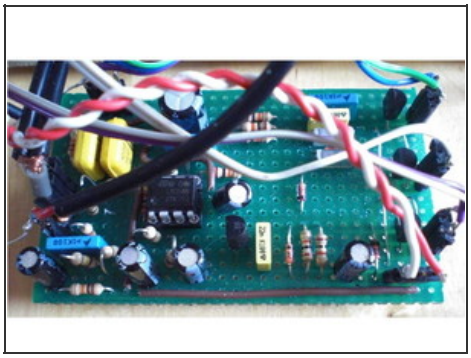
SUMMARY

The starting point of this project is an easy-to-handle video false color device, sound reactive and also suitable for a DJ. The input signal can be a PAL/NTSC video camera or video player. As output device you can use a flatscreen monitor or a beamer. The Visualist has mainly analog circuits so the effects are in real time. You need to have some knowledge of electronic circuits, parts and soldering. Success!

Step 1 — Visualist, '70s Video Effects

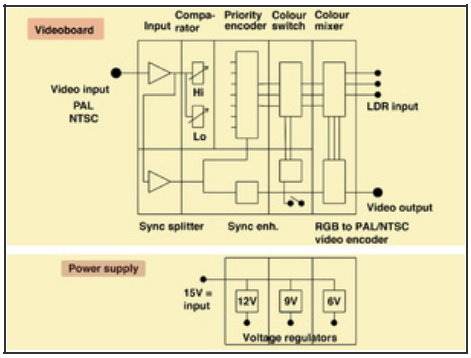


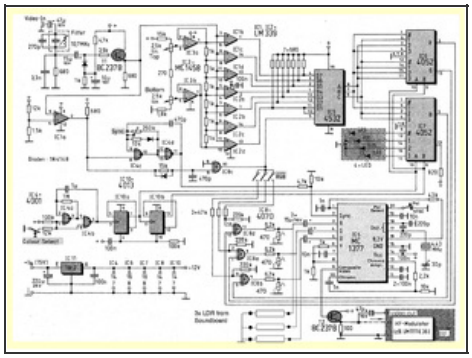


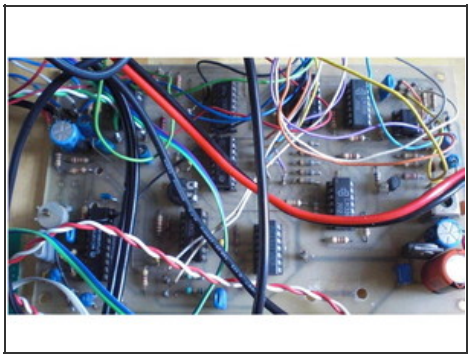


- The block diagram of the sound board shows the selection switch between the built-in microphone and the line input. After that comes the automatic volume control. Third is the filter for bass, mid and high tones. Last are the LED drivers for the Light Dependent Resistors. They control the RGB color saturation in the output video signal.
- The second picture shows the sound circuit.
- The third picture is a photo of the sound board built on a single island board.

Step 2

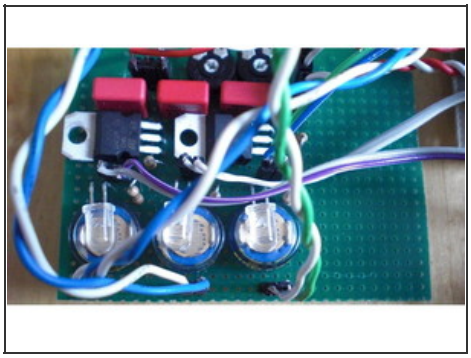


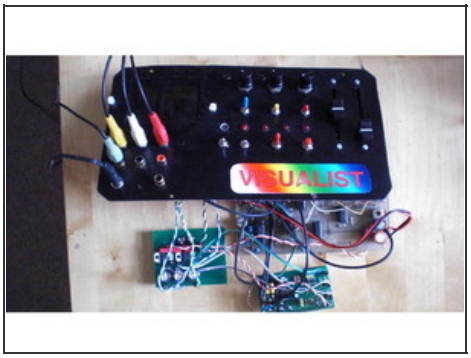


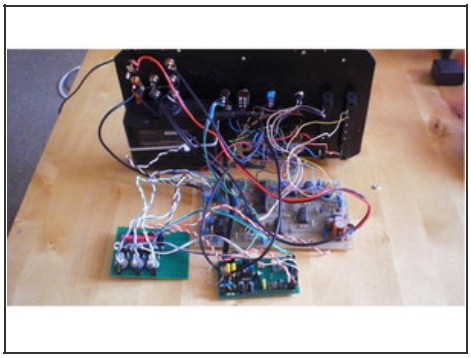


- The first picture shows the block diagram of the video board; a kind of flow diagram.
- In this circuit the color video input signal is made into a b/w signal by cutting off the color burst using a notch filter (10.7Mhz). It's not perfect but it's sufficient.
- The signal is split in 2 directions: 1- Via the comparator IC1a the sync pulse is passed to the oscillator IC4c/d (31250khz) to make a semi-normal PAL-sync-mix for IC9, the "famous" MC1377P RGB to PAL/NTSC encoder. 2- The way through the seven comparators IC1 and IC2.
- With six resistors between IC3a/b we can control the upper and lower threshold and the threshold for every luminosity level in between. In other words, the signal will be "sliced" into 7 luminosity levels. Each level will produce a color out of a range of combinations chosen by IC6 and IC7. It's in fact a "false" color generator.
- After the comparator the signal passes through a priority encoder IC5 that results in a 3-bit-word. IC6 and IC7 (1 out of 4 analog switches) are doing the color change. The 2-bit control signal is made by IC10 and IC4a/b.
- Pressing the "color select" button briefly makes a color change; holding the button down makes a continuous color change. More effects are produced by the RGB inverter switches; they invert the color layers.
- The third photo shows the components built on a printed circuit board.

Step 3

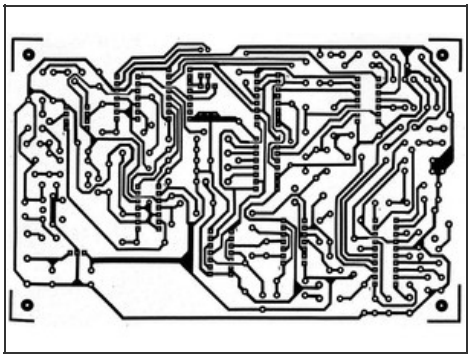


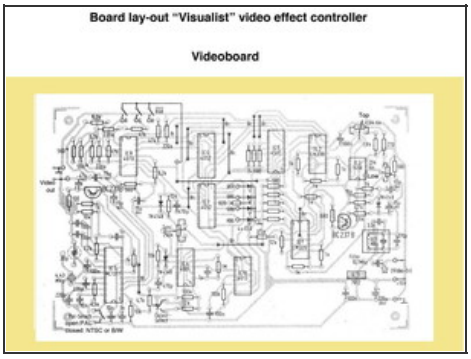


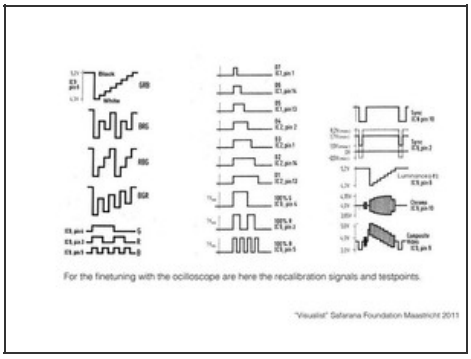


- Picture one shows the 3 voltage regulators on the top and the LED/LDR bridge on the bottom.
- Picture two shows the top of the Visualist control panel and the 3 circuit boards.
- Picture three shows the bottom of the control panel with the wiring.

Step 4

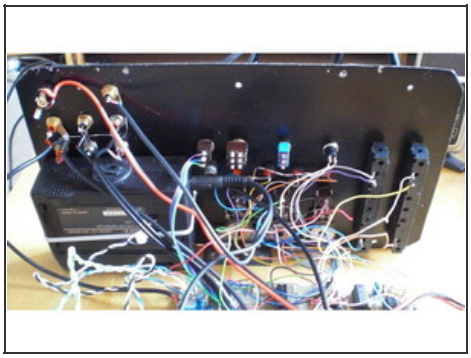






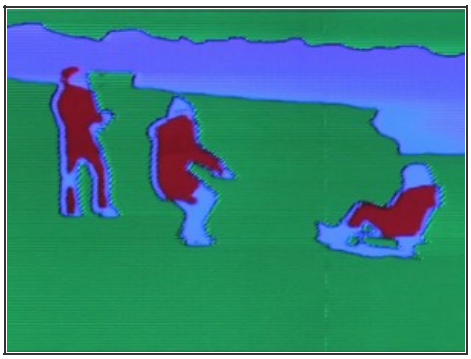
- Picture one shows the printed circuit board.
- Picture two shows the component placement on the board. Take care; make good solder connections. Make first all the wire bridges; after that place the IC pins. Work clean.
- Picture three shows the oscilloscope signals for calibration on the test points.

Step 5



- Picture one shows the position of the control buttons and sliders with the wires. Use red, green and red wires for the 3 channels.
- Picture two shows a top view of the Visualist. The layout of the parts depends on your own taste. I added a built-in video monitor. A switch allows the user to monitor either the input or output signal. There is also a stereo sound in- and output connector. The power adaptor delivers 16V at 1A.
- Picture three shows the set-up with a flatscreen monitor. Not only the color saturation but also the video signal itself can be controlled. The comparator potentiometers are fun to experiment with. In the instruction video you can see the wonderful effects. A small microphone case is perfect as a console for the VISUALIST. Success with building!!!

Step 6



- Picture one: An example of young people playing in the snow. This video shows before and after processing.
- Picture two: Some people standing in front of the flatscreen at a party. The camera above the screen captured them. This video shows the Visualist in use at a party.
- Picture three: A screenshot out of the Visualist video above.

This project is a good start for further experimentation with video effects. A PDF guide of the Visualist gives a bit more information. You can download it from here.

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